

The Oregon specimens agree perfectly with the excellent description given by Mr. Long. It is interesting to note that Linnaeus originally placed this and the other species of *Muscari* in *Hyacinthus*; and it remained for Philip Miller to point out that the shape of the corolla in this group showed so marked a deviation from the funnel- or bell-shaped corolla of *Hyacinthus* proper as to justify a generic segregation.

Boissier in the *Flora Orientalis* 5: 291 (1884), gives the native range of *M. comosum* as from Greece and Thrace to Transcaucasia, Asia Minor, Cyprus and Mesopotamia, westward over all of central and southern Europe to Belgium, and into northern Africa. All these Mediterranean weeds seem to find the climate and soil of Oregon peculiarly congenial, and each season marks the appearance of immigrants previously unknown.

SALEM, OREGON.

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## THE AMERICAN VARIATIONS OF LINNAEA BOREALIS.

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FOR many years the Twinflower of northeastern America passed unquestioned as identical with the European *Linnaea borealis* L., and after it was separated in 1825 as *L. americana* Forbes, it was not generally treated as even varietally distinguishable from the European until it was revived as a species by Britton<sup>1</sup> in 1901 and as var. *americana* (Forbes) Rehder, *RHODORA*, vi. 56 (1904). In all recent treatments which I have examined it seems to be implied that the typical *L. borealis* does not occur in America and that our plants all belong to the broadly distributed var. *americana* and the more restricted var. *longiflora* Torr. of the Pacific slope, or to a reputed Alaskan species, *L. serpyllifolia* Rydberg, *Journ. N. Y. Bot. Gard.* viii. 135 (1907). Much of the material from western Alaska and the Aleutian Islands, however, the plant called by Rydberg *L. serpyllifolia*, is quite like typical European *L. borealis*. The western var. *longiflora*, similarly, does not seem to be clearly interpreted. Sometimes, as by Rydberg,<sup>2</sup> it has been treated as a species; sometimes, as by Piper,<sup>3</sup> it has been united without attempt at differentiation with the widely dispersed

<sup>1</sup> Britton, *Man.* 873 (1901).

<sup>2</sup> Rydb. *Fl. Rocky Mts.* 812 (1917).

<sup>3</sup> Piper, *Fl. Wash.* 528 (1906).

var. *americana* as a species, *L. americana*; while later, by Piper & Beattie,<sup>1</sup> all material of the northwest coast has been treated without distinction as var. *longiflora*. Again, certain plants from the lower St. Lawrence, on account of unusually long corollas (1.5 cm.) have been distributed as var. *longiflora*. In view of this diversity of interpretation the following statement of the essential characters of the three well defined American varieties may be of service.

- Corolla campanulate, 6–9 mm. long, flaring from well within the calyx, the tube very short: calyx-segments 1.5–2.7 mm. long. . . . . *L. borealis* (typical).
- Corolla more funnelform, flaring from above the calyx, its tube exerted.
  - Calyx-segments 1.5–3 mm. long: corolla 8–15 mm. long . . . Var. *americana*.
  - Calyx-segments 3–5 mm. long: corolla 10–16 mm. long . . . . Var. *longiflora*.

*L. BOREALIS* L. Sp. Pl. 631 (1753). *L. serpyllifolia* Rydb. Journ. N. Y. Bot. Gard. viii. 135 (1907).—Northern Eurasia; Alaska. The following Alaskan specimens are characteristic: Cape Nome, 1900, *Blaisdell*; Anvik, July 20, 1907, *J. W. Chapman*; lower Yukon, 1910, *J. A. Kusche*; Makushin Bay, Unalaska, July 14, 1907, *E. C. Van Dyke*, no. 39; Nazan Bay. Atka Island, July 28, 1907, *Van Dyke*, no. 278.

In describing *L. serpyllifolia*, Rydberg stated that the Alaskan plant differs from *L. borealis* “in the very narrow [linear-subulate] almost glabrous calyx-lobes . . . smaller size [corolla about 6 mm. long] of the flower and of the leaves [5–8 mm. long], and in the indistinct tothing of the latter.” But surely much of the European plant has linear-subulate calyx-segments. Witness the detailed illustrations in Wittrock’s exhaustive study<sup>2</sup> of variation in the European plant—for instance t. 6, figs. 9a and 25a, t. 7, fig. 11a, t. 8, figs. 10a and 29a, t. 9, fig. 13a, etc. etc. Similarly Wittrock recognizes in Europe six named forms with the corolla between 6 and 7 mm. long, and he defines the smaller-leaved forms of Europe with leaves as small as in the Alaskan plant, while such an illustration as his t. 6, fig. 7, showing strictly entire leaves is convincing proof that the Alaskan plant is not specifically separated by the “indistinct tothing” of the leaves. Rydberg recognizes his *L. serpyllifolia* as apparently occurring “also . . . on the island of Sachalin.” It is elsewhere in eastern Asia (Amur, *Maximowicz*; Kamtchatka, *Kusmischscheff*; Transbaicalia, *Turczaninow*; Irkutsk, *Haupt*; etc.) and it

<sup>1</sup> Piper & Beattie, Fl. N. W. Coast, 338 (1915).

<sup>2</sup> Wittrock, *Linnaea borealis* L. Species polymorpha et polychroma. Acta Horti Bergiani, iv. no. 7 (1907).

extends thence westward and is quite inseparable from typical *L. borealis* of Europe.

Var. AMERICANA (Forbes) Rehder, RHODORA, vi. 56 (1904) *L. americana* Forbes, Hort. Woburn. 135 (1825). Var. *longiflora*, forma *insularis* Wittrock, Acta Horti Bergiani, iv. no. 7: 173, t. 13, fig. 11 (1907). Var. *longiflora*, forma *orientalis* Wittr. l. c. figs. 7-9, (1907). *L. borealis*, forma *curticalyx* Wittr. l. c. 174 (1907). *L. borealis* forma *minutifolia* Wittr. l. c. t. 13. fig. 14 (1907). *L. borealis*, forma *integerrima* Wittr. l. c. t. 13 fig. 15 (1907).—Western Greenland and Labrador to Alaska, south to southern New England, Long Island, Maryland, West Virginia, Indiana, South Dakota, Colorado, Utah and northern California.

Var. LONGIFLORA Torr. in Wilkes, S. Pacif. Expl. Exped. xvii. 327 (1874). *L. longiflora* (Torr.) Howell, Fl. N. W. Am. 280 (1900). Var. *longiflora*, forma *angustissima* Wittrock, l. c. 173, t. 13, fig. 12 (1907).—Southwestern British Columbia to northern California.—GRAY HERBARIUM.

*The date of the September issue (unpublished as this goes to press) will be announced later.*